The Gambia Pneumococcal Vaccine Trial

BACKGROUND ABOUT PNEUMOCOCCAL DISEASE

Streptococcus pneumoniae are bacteria that are frequently found in the upper respiratory tract of healthy children and adults. These bacteria, however, can also cause a range of infections—from relatively mild ear infections to fatal pneumonia, meningitis, and sepsis. Serious pneumococcal infections can occur throughout life, but children under two years old and the elderly are at highest risk.

Serious pneumococcal infections are a major global health problem. The World Health Organization estimates that more than 1.6 million people—including more than 800,000 children under five—die every year from pneumococcal infections. Nearly all of these deaths occur in the world's poorest countries. Pneumococcal meningitis is the most severe form of pneumococcal disease and one of the most fatal childhood illnesses. In developing countries it kills or disables 40 to 70 percent of children who get it.

The primary causes of death from pneumococcus are pneumonia, in which fluid fills the lungs, hindering oxygen from reaching the bloodstream; meningitis, an infection of the fluid surrounding the spinal cord and brain; and sepsis, an overwhelming infection of the bloodstream by toxin-producing bacteria.

DIAGNOSIS

Pneumonia can be diagnosed in a number of different ways. A chest X-ray is the most specific way to diagnose pneumonia. Healthcare providers can also diagnose many cases by using a stethoscope and/or observing a child's respiratory rate and breathing patterns.

ANTIBIOTIC RESISTANCE, HIV WORSEN THREAT

Pneumococcal infections are becoming more difficult to treat as bacteria become resistant to some of the most commonly used antibiotics. Antibiotic resistance has economic, as well as clinical consequences. Overuse of antibiotics leads to increased resistance and threatens the effectiveness of existing therapy, which in turn increases the cost of treatment by requiring the use of more expensive antibiotics.

Data from a recently published study suggest that the problem of pneumococcal disease will increase in the wake of increasing HIV infection. Data from a South African study show that children with HIV/AIDS are 20 to 40 times more likely to get pneumococcal disease than children without HIV/AIDS.

SAVING LIVES WITH VACCINES

New, lifesaving pneumococcal vaccines are safe and highly effective in preventing pneumococcal disease. Since 2000, when U.S. infants began receiving routine vaccination against pneumococcal disease, the country has nearly eliminated childhood pneumococcal disease caused by vaccine serotypes. In addition, vaccination of infants has reduced the spread of pneumococcal bacteria so that adults have less contact with pneumococci and are thus indirectly protected from pneumococcal disease.

PLEASE VISIT THESE WEB SITES FOR MORE INFORMATION:

Pneumococcal Vaccines Accelerated Development and Introduction Plan (PneumoADIP) at Johns Hopkins Bloomberg School of Public Health, www.preventpneumo.org

National Institute of Allergy and Infectious Diseases (NIAID), www.niaid.nih.gov/factsheets/pneumonia.htm

QUICK FACTS ABOUT PNEUMOCOCCAL DISEASE AND VACCINATION

- According to the World Health Organization (WHO) pneumococcal pneumonia and meningitis are responsible for 800,000 to 1 million child deaths each year. (1, 2)
- More than 90 percent of pneumococcal pneumonia deaths in children occur in developing countries. (Derived from 3)
- In developing countries, pneumococcal meningitis kills or disables 40-75 percent of children who get it. (4, 8)
- Children with HIV/AIDS are 20 to 40 times more likely to get pneumococcal disease than children without HIV/AIDS. (5,6)
- Increasing rates of drug-resistant pneumococcal infections threaten the effectiveness of antibiotic treatment. (9, 10, 11)
- Conjugate pneumococcal vaccination is safe and effective for preventing severe childhood pneumococcal disease caused by serotypes included in the vaccine. (1)
- Conjugate vaccines containing 7 to 11 pneumococcal serotypes are expected to prevent 50-80% of all serious childhood pneumococcal disease worldwide. (13)
- High-risk infants and children, including those with HIV infection, can be safely and effectively vaccinated with pneumococcal conjugate vaccines. (7)
- Conjugate pneumococcal vaccines represent an effective tool for preventing antibiotic-resistant infections. (1, 12,14)
- Routine pneumococcal conjugate vaccination in developing countries could contribute to achieving the United Nations' Millennium Development Goal to decrease childhood deaths by two-thirds by the year 2015.

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